BEFORE THE STATE OF WASHINGTON
ENERGY FACILITY SITE EVALUATION COUNCIL

IN RE APPLICATION NO. 99-1

SUMAS ENERGY 2 GENERATION FACILITY

EXHIBIT _____ (JW-4)

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Wetland Delineation & Mitigation Report

for the

Sumas Energy 2, Inc. Electric Generating Plant Facility

Sumas, Whatcom County, WA

Prepared for:

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June 26, 2000

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1.0 PROJECT UNDERSTANDING

1.1 Scope of Work

The report was prepared for purposes of discussing settlement with the Washington Department of Ecology (WADOE) and the Washington Department of Fish and Wildlife (WADFW) in connection with the Energy Facility Site Evaluation Council (EFSEC) proceedings concerning the Sumas Energy 2, Inc. generation facility.

This report summarizes the conclusions of past wetland delineations conducted at the project site, but supplements those delineations with additional analysis of areas designated by the Natural Resource Conservation Service (NRCS) as "prior converted cropland." This supplemental analysis is not intended to supersede the existing wetland boundaries confirmed by the NRCS and the U.S. Army Corps of Engineers.

The report also presents an expanded wetland mitigation plan.

1.2 Background

The plant site wetlands were studied and delineated by David Evans and Associates, Inc. and Bexar Environmental Consulting Ltd., and subsequently confirmed by the NRCS in 1995 and 1996. At that time, the NRCS was the agency responsible for confirming Section 404 wetlands within agricultural areas pursuant to a multi-agency agreement, including the Corps of Engineers. The NRCS confirmation is still in effect and is being used by the Corps.

David Evans and Associates (DEA) conducted a wetland reconnaissance in January through April 1995. The wetland reconnaissance was followed by a formal wetland delineation in October 1995 during which time soil and hydrology were sampled and recorded. Wetland boundaries were flagged and surveyed by Larry Steele & Associates as shown on the map contained in Appendix A.

Subsequent to the DEA delineation, it was determined that the land was subject to prior converted cropland (PC) rules as administered by the NRCS and recognized by the Corps of Engineers. At the time of the delineation, the NRCS was charged as the lead agency for establishing wetland boundaries on agricultural lands. This procedure was established by a January 6, 1994 Memorandum of Agreement (MOA) between the Corps, the U.S. Environmental Protection Agency, the U.S. Department of Agriculture (NRCS), and U.S. Fish and Wildlife Service. Application of the MOA in the state of Washington was established by a coordinated agreement between these federal agencies and the WADOE and the WADFW in August 1994.

Accordingly, wetland boundaries were confirmed by the NRCS through onsite analysis and a review of aerial photography. The wetland boundaries map as confirmed by the NRCS, and accompanying correspondence, are contained in Appendix B. It is this confirmation that Sumas Energy 2, Inc. has relied upon for its Section 404 application to the Corps of Engineers and its application to

EFSEC. The NRCS confirmation has been reaffirmed as being valid by the Corps in its letter dated February 15, 1996.

After receiving comments from the WADOE and WADFW, Bexar Environmental Consulting Ltd. (Bexar) performed additional observations and sampling of the areas previously designated as prior converted croplands. Although Bexar maintains that the prior converted cropland designation continues to be appropriate, this report discusses the extent to which some of those cropped areas may have wetland characteristics.

2.0 METHODOLOGY

The wetlands on the site were delineated in 1995 by DEA and Bexar according to the methodology described in the 1987 publication titled "Corps of Engineers Wetlands Delineation Manual" (1987) and the USDA-NRCS National Security Food Act Manual, Part 514. Reference was also made to the March 1997 Washington State Department of Ecology titled "Washington State Wetlands Identification and Delineation Manual".

Bexar assessed the wetland functions and categories using the Washington Department of Ecology Draft Wetland Characterization Methodology, a Snohomish County functional assessment methodology based on the Wetland Evaluation Technique, and the Washington State Wetland Rating System.

3.0 RESULTS

3.1 Project Site Setting

Plant Site

The proposed plant site is situated approximately 2,200 feet south of the U.S./Canadian border, in the south ½ of Section 34, Township 41N, Range 4E, Sumas, Washington (Figure 1).

The proposed plant site is located in an agricultural field managed for corn production that has been artificially drained with drain tile and ditches. The land is nearly level and slopes downward slightly to the middle of the property at the location of an existing ditch, and also to the east.

The site is bordered on the north by a fallow fill site, the south by State Highway 9, the east by fill and fallow pasture, and the west by cornfield and an approximate 9-acre wooded area. The IKO asphalt shingle plant is located west of the wooded area and cornfield.

3.2 Soils

The Natural Resource Conservation Service (NRCS) soil maps for Whatcom County indicates the majority of the project area to be occupied with Sumas silt loam, 0 to 2% slopes (#162). A minor part of the property is mapped as having Puget silt loam, drained 0 to 2% slopes (#123) at the southeast part of

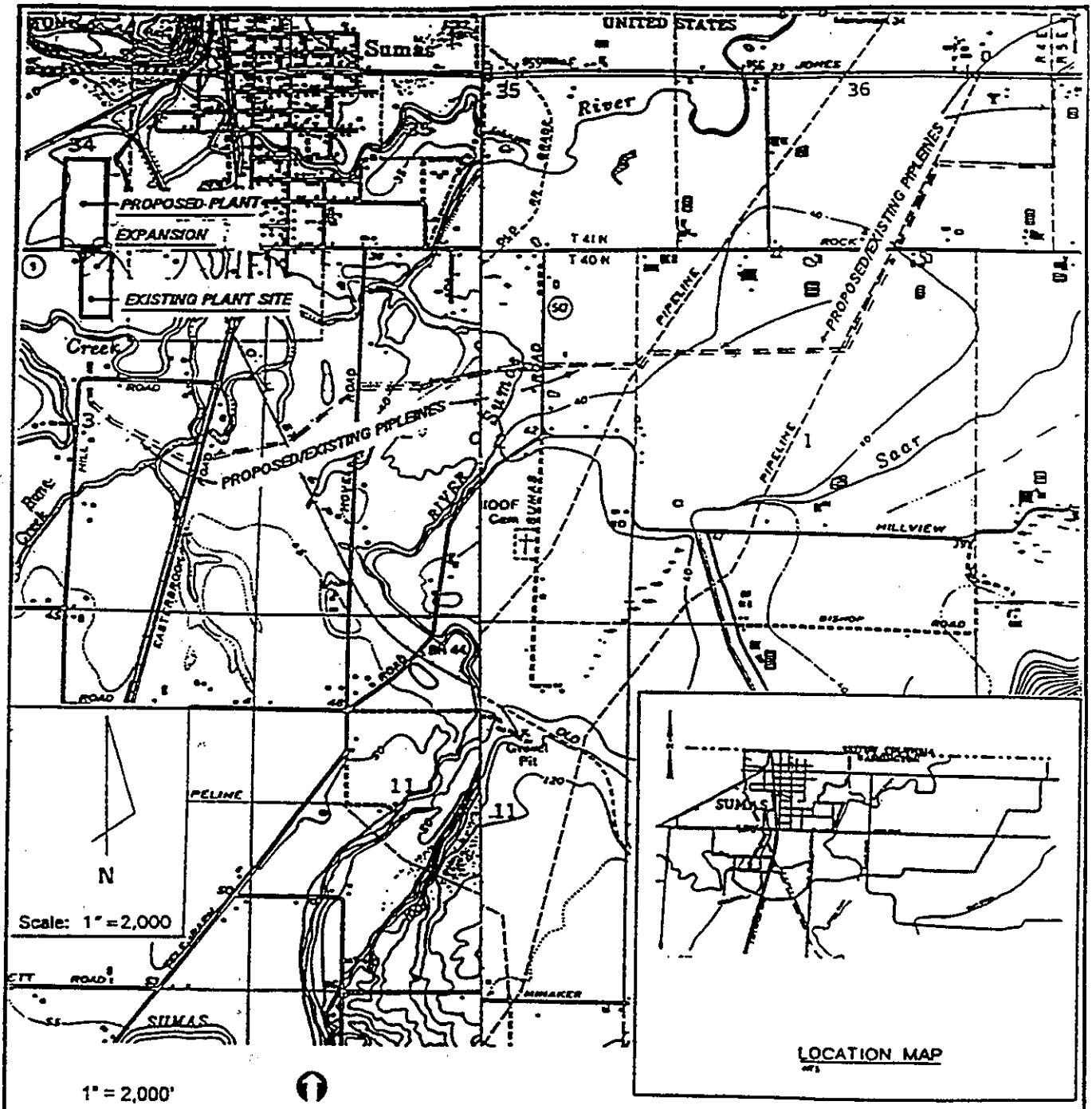

Figure 1 - Vicinity Map

COE No. 98-4-02021

Applicant: SUMAS ENERGY 2, INC.

Proposal: Wetland Fill for Electric Generation Facility

At: Sumas, Whatcom Co., WA

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the site, and most of the west mitigation site. Both of these soil units are on the NRCS list of hydric soils.

The soils within the plant site and west mitigation area have been subject to intense manipulation to promote its agricultural use. Drain tile and ditching have been installed to accelerate drainage, and the land is typically disked three of four years for the planting of corn. The disking effectively breaks up the soil structure into unnatural blocks to accelerate drainage and promote root penetration of the corn.

3.3 Hydrology

General

The site is located within the Fraser River drainage basin, and also receives overbank flooding from the Nooksack River during severe flood events. The plant site is situated on lands that drain to Sumas Creek via a drainage ditch and storm sewer.

Hydrology for the wetlands is attributed to a seasonal high groundwater table and precipitation. The wetlands are not influenced by the Sumas River, Johnson Creek or Sumas Creek.

Site hydrology has been observed and sampled on numerous occasions over the past five years. The significant observations were:

January through April 1995 (DEA)
October 10, 1995 (DEA)
January 18, 1996 (NRCS, Bexar)
May 3, 2000 (WADOE*, Bexar, Robinson and Noble, Inc.)
May 17, 2000 (WADOE, Bexar)
May 18, 2000 (Bexar)

Plant Site

The plant site is situated on agricultural lands that have been artificially drained with ditching and functioning drain tile. Drain tile consists of 4-inch diameter pipe laid in 4-foot sections at a depth of 20 to 36-inches. Ditches are located on the south property line, and the common boundary between the plant site and the wooded area (see Wilson Engineering map, Appendix B). Flow from this ditch originates from the Burlington Northern railroad grade side ditch, which is supplemented with runoff from the IKO stormwater detention pond. The onsite, north-south ditch outfalls into a significant ditch described in the following paragraph.

A large drainage ditch enters the southwest part of the site at State Highway 9, and flows northeast through the plant site, and ultimately into Johnson Creek. The drainage ditch is culverted for approximately 800-feet east of the east plant site boundary towards Sumas Creek and Johnson Creek. The ditch

* WADOE visited the site on May 3 and 17, 2000 in its capacity as EFSEC's consultant.

was reportedly constructed to primarily convey runoff from State Highway 9, but has also served to drain the surrounding land. The drain tile are directed to flow and outfall in the direction of this ditch.

The Farmed Wetland Pasture (FWP) wetlands are typically ponded for greater than 14 days during the growing season. The wetland ditch possesses surface water for the majority of the growing season, but flow has been observed only following significant, prolonged rainfall. It is stagnant during the summer. Other wetland areas previously identified by DEA, and this spring by Bexar, are saturated at or near the surface during the early part of the growing season, and to a lesser extent, the latter part of the growing season.

Wetland hydrology as defined in the WA State Wetlands Delineation Manual (WSWDM) and the 1987 Federal Manual requires that areas be seasonally inundated and/or saturated to the surface for a consecutive number of days greater than 12.5% of the growing season, provided the soil and vegetation parameters are met. Areas inundated or saturated between 5% and 12.5% of the growing season may or may not be wetlands. There is little guidance as to when a 5% threshold applies, and under what conditions that the 12.5% threshold applies. In the absence of such guidance it is reasonable to apply the 12.5% threshold given the manipulated and drained condition of the property. Drained lands and soils, or permeable soils typically require more water to satisfy wetland hydrology.

The growing season as defined by the NRCS for the Clearbrook Station (close to Sumas) begins March 30th and ends November 2nd, which is a 241-day period. 5% is 12 days and 12.5% is 30 days.

Rainfall. March 2000 rainfall for Bellingham was normal, while the available Clearbrook records suggest that rainfall was also near normal for March (see Appendix D). April rainfall for Clearbrook was above was normal (3.80" vs. 3.33"), and May was significantly above normal (5.71" vs. 2.85").

Of interest is that 4.16" of rainfall occurred for the 20 day period prior to the May 3rd WADOE site inspection. This includes 0.38" of rainfall that day. An additional 1.94" of rain occurred over the next 7 days, up to and including May 10th, which includes 0.50" of rainfall that day. 0.41" of rainfall occurred over the next seven days, up to the May 17th WADOE inspection.

Water levels dropped significantly in numerous of the sample holes during the period from May 3rd to May 17 and it is believed that most of the decrease occurred in the six or seven days preceding the May 17th inspection date. Except for the ponded area, most other samples experienced a significant decrease in the water level as indicated in the table in Appendix D. These sample points are considered to not have met the hydrology test for wetlands.

Of additional interest, is that for the 21-day period of March 24th to April 13th, only 0.84" of precipitation was recorded. For the 16-day period of March 29th to April 13th, only 0.33" of precipitation was recorded. It is assumed that continuous wetland hydrology was interrupted during this period.

Many of the samples were not saturated at the May 17th and 18th inspections. The site obviously experiences rapid infiltration and accelerated drainage due to the plowed condition of the soil. The more compact subsoil prevents effective